

CLAIMS

1. An exhaust gas purifying filter comprising:  
a ceramic honeycomb structure having a  
surrounding wall, partition walls provided in a honeycomb  
5 pattern within the surrounding wall, and a plurality of  
cells partitioned by the partition walls and, at the same  
time, penetrating through from one end face of the  
ceramic honeycomb structure to the other;

wherein if a virtual line is drawn on the  
10 both end faces of the ceramic honeycomb structure by  
continuously connecting points at a distance of 1.0 to  
3.0 times the pitch of the cells in the direction toward  
the center from the inner surface of the surrounding  
wall, not less than 90% of the peripheral area outside  
15 the virtual line is blocked with plug material.

2. An exhaust gas purifying filter, as set forth  
in claim 1, wherein a partial area or the whole area of  
the opening of each cell through which the virtual line  
passes is blocked with the plug material.

20 3. An exhaust gas purifying filter, as set forth  
in claim 1, wherein the ceramic honeycomb structure has  
the surrounding wall and the partition walls with a  
porosity of not less than 50%.

25 4. An exhaust gas purifying filter, as set forth  
in claim 1, wherein the surrounding wall has a thickness  
of 0.2 to 0.8 mm.

5. An exhaust gas purifying filter, as set forth  
in claim 1, wherein the ceramic honeycomb structure is  
made of cordierite.

30 6. An exhaust gas purifying filter, as set forth  
in claim 1:

wherein the exhaust gas purifying filter  
is one for a diesel engine for purifying an exhaust gas  
discharged from the diesel engine; and

35 wherein in the central area within the  
virtual line on the end face of the ceramic honeycomb  
structure, both openings of the cells provided with plug

material and openings of the cells not provided with plug material exist mixedly in such a way that they are arranged alternately.

5           7.    An exhaust gas purifying filter, as set forth in claim 1, wherein the virtual line is a line drawn by continuously connecting points at a distance of 1.0 to 2.0 times the pitch of the cells in the direction toward the center from the inner surface of the surrounding wall.

10           8.    An exhaust gas purifying filter, as set forth in claim 1, wherein the partition wall has a thickness of 0.25 to 0.40 mm.

          9.    A method for manufacturing an exhaust gas purifying filter comprising:  
15               a forming process for forming a ceramic honeycomb structure having a surrounding wall, partition walls provided in a honeycomb pattern within the surrounding wall, and a plurality of cells partitioned by the partition walls and, at the same time, penetrating  
20               through from one end face of the ceramic honeycomb structure to the other;

              a masking process for pasting mask tapes to the entire end faces of the ceramic honeycomb structure;

25               a drilling process in which a virtual line is drawn by continuously connecting points at a distance of 1.0 to 3.0 times the pitch of the cells in the direction toward the center from the inner surface of the surrounding wall, and at least the mask tape pasted to  
30               the openings of the cells through which the virtual line passes and the openings of the cells outside the virtual line is drilled; and

              a plugging process in which not less than 90% of the peripheral area outside the virtual line is  
35               blocked with plug material after dipping the end faces into the plug material paste and forming the plug material in the openings of the cells other than those

blocked with the mask tape.

10. A method for manufacturing an exhaust gas purifying filter, as set forth in claim 7, wherein as for part of the mask tape pasted to the openings of the cells within the virtual line, the part of the mask tape pasted to one of two neighboring openings of the cells is drilled in the drilling process.

11. A method for manufacturing an exhaust gas purifying filter comprising:

10 a forming process for forming a ceramic honeycomb structure having a surrounding wall, partition walls provided in a honeycomb pattern within the surrounding wall, and a plurality of cells partitioned by the partition walls and, at the same time, penetrating through from one end face of the ceramic honeycomb structure to the other;

15 a masking process in which a virtual line is drawn on the end face of the ceramic honeycomb structure by continuously connecting points at a distance of 1.0 to 3.0 times the pitch of the cells in the direction toward the center from the inner surface of the surrounding wall and a mask tape is pasted to the central area within the virtual line; and

20 a plugging process in which not less than 90% of the peripheral area outside the virtual line is blocked with plug material after dipping the end faces into the plug material paste and forming the plug material in the openings of the cells other than those blocked with the mask tape.

25 12. A method for manufacturing an exhaust gas purifying filter, as set forth in claim 9, wherein the drilling process is carried out for drilling at least the mask tape covering the openings of the cells through which the virtual line passes after the making process and before the plugging process.

30 13. A method for manufacturing an exhaust gas purifying filter comprising:

5 a forming process for forming a ceramic  
honeycomb structure having a surrounding wall, partition  
walls provided in a honeycomb structure within the  
surrounding wall, and a plurality of cells partitioned by  
the partition walls and, at the same time, penetrating  
through from one end face of the ceramic honeycomb  
structure to the other;

10 a masking process for pasting mask tapes  
to the entire end faces of the ceramic honeycomb  
structure;

15 a cutting process in which a virtual line  
is drawn on the end face by continuously connecting  
points at a distance of 1.0 to 3.0 times the pitch of the  
cells in the direction toward the center from the inner  
surface of the surrounding wall, and the mask tape pasted  
to the peripheral area outside the virtual line is cut  
and removed; and

20 a plugging process in which not less than  
90% of the peripheral area outside the virtual line is  
blocked with plug material after dipping the end faces  
into the plug material paste and forming the plug  
material in the openings of the cells other than those  
blocked with the mask tape.

25 14. A method for manufacturing an exhaust gas  
purifying filter, as set forth in claim 11, wherein the  
drilling process is carried out for drilling at least the  
mask tape covering the openings of the cells through  
which the virtual line passes after the cutting process  
and the before the plugging process.

30 15. A method for manufacturing an exhaust gas  
purifying filter comprising:

35 a forming process for forming a ceramic  
honeycomb structure having a surrounding wall, partition  
walls arranged in a honeycomb pattern within the  
surrounding wall, and a plurality of cells partitioned by  
the partition walls and, at the same time, penetrating  
through from one end of the ceramic honeycomb structure

to the other;

a masking process for pasting mask tapes to the entire end faces of the ceramic honeycomb structure;

5 a cutting process in which a virtual line is drawn on the end face by continuously connecting points at a distance of 1.0 to 3.0 times the pitch of cells in the direction toward the center from the inner surface of the surrounding wall, and the mask tape is cut  
10 along the partition walls of the cells through which the virtual line passes and, at the same time, the mask tape outside the virtual line is removed; and

a plugging process in which not less than 90% of the peripheral area outside the virtual line is  
15 blocked with plug material after dipping the end faces into the plug material paste and forming the plug material in the openings of the cells other than those blocked with the mask tape.

16. A method for manufacturing an exhaust gas purifying filter, as set forth in claim 9, wherein as for  
20 the mask tape pasted to the openings of the cells within the virtual line, the mask tape pasted to one of two neighboring openings of the cells is drilled after the masking process and before the plugging process.

25 17. A method for manufacturing an exhaust gas purifying filter, as set forth in claim 11, wherein as for the mask tape pasted to the openings of the cells within the virtual line, the mask tape pasted to one of two neighboring openings of the cells is drilled after  
30 the masking process and before the plugging process.

18. A method for manufacturing an exhaust gas purifying filter, as set forth in claim 13, wherein as for the mask tape pasted to the openings of the cells within the virtual line, the mask tape pasted to one of  
35 two neighboring openings of the cells is drilled after the masking process and before the plugging process.

19. A method for manufacturing an exhaust gas

purifying filter, as set forth in claim 9, wherein the virtual line is a line drawn by continuously connecting points at a distance of 1.0 to 2.0 times the pitch of the cells in the direction toward the center from the inner surface of the surrounding wall.

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20. A method for manufacturing an exhaust gas purifying filter, as set forth in claim 9, wherein the partition wall has a thickness of 0.25 to 0.40 mm.

21. A method for manufacturing an exhaust gas purifying filter, as set forth in claim 11, wherein the virtual line is a line drawn by continuously connecting points at a distance of 1.0 to 2.0 times the pitch of the cells in the direction toward the center from the inner surface of the surrounding wall.

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22. A method for manufacturing an exhaust gas purifying filter, as set forth in claim 11, wherein the partition wall has a thickness of 0.25 to 0.40 mm.

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23. A method for manufacturing an exhaust gas purifying filter, as set forth in claim 13, wherein the virtual line is a line drawn by continuously connecting points at a distance of 1.0 to 2.0 times the pitch of the cells in the direction toward the center from the inner surface of the surrounding wall.

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24. A method for manufacturing an exhaust gas purifying filter, as set forth in claim 13, wherein the partition wall has a thickness of 0.25 to 0.40 mm.

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25. A method for manufacturing an exhaust gas purifying filter, as set forth in claim 15, wherein the virtual line is a line drawn by continuously connecting points at a distance of 1.0 to 2.0 times the pitch of the cells in the direction toward the center from the inner surface of the surrounding wall.

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26. A method for manufacturing an exhaust gas purifying filter, as set forth in claim 15, wherein the partition wall has a thickness of 0.25 to 0.40 mm.

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